

CLAIMS

What is claimed is:

Claim 1. A precise linear fastener system comprising:

a collet member having a base end, a top end, an inner engaging surface, and an outer ribbed surface positioned about a central axis;

a compression ring member having a base end, a front end, an inner ribbed surface, and an outer surface positioned about a central axis;

said inner ribbed surface of said compression ring member being constructed and arranged for coaxial alignment and overlapping engagement with respect to said outer ribbed surface of said collet member, said compression ring member linearly traversable with respect to said outer ribbed surface of said collet member between a first release position and a second engaged position, wherein said engaged position results in said ribbed surfaces compressing said collet member and tensilely loading said compression ring member to engage a shank member having an outer gripping surface, and wherein said release position results in expansion of said collet member thereby releasing said outer gripping surface of said shank member.

Claim 2. The precise linear fastener system of claim 1

including

1 a shank member having an outer gripping surface, a first end,
2 and a second end.

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4 Claim 3. The precise linear fastener system of claim 1
5 wherein said ribbed outer surface of said collet member
6 includes at least one outwardly and circumferentially extending
7 rib, each said rib including a first ramp surface to facilitate
8 coaxially aligned linear overlapping movement of said
9 compression ring in relation to said collet member for
10 engagement thereof, and a second ramp surface to facilitate
11 linear removal of said compression ring from said collet
12 member.

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14 Claim 4. The precise linear fastener system of claim 1
15 wherein said inner engaging surface of said collet member is
16 constructed and arranged with a conjugate shape in relation to
17 said outer gripping surface of said shank member.

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19 Claim 5. The precise linear fastener system of claim 1
20 wherein said inner engaging surface of said collet member is
21 constructed and arranged with internal threads.

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23 Claim 6. The precise linear fastener system of claim 1
24 wherein said inner engaging surface of said collet member is
25 constructed and arranged with a knurled surface.

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1 Claim 7. The precise linear fastener system of claim 1
2 wherein said inner engaging surface of said collet member is
3 constructed and arranged with a generally smooth surface.

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5 Claim 8. The precise linear fastener system of claim 1
6 wherein said inner engaging surface of said collet member is
7 constructed and arranged with at least one inwardly depending
8 lip; wherein said inwardly depending lip is constructed and
9 arranged with at least one tapered surface for cooperation with
10 a conjugate tapered surface on said outer gripping surface of
11 said shank member;

12 wherein linear traversal of said compression ring member
13 with respect to said axially aligned collet member compresses
14 said collet member and tensilely loads said shank member.

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16 Claim 9. The precise linear fastener system of claim 1
17 wherein said inner engaging surface of said collet member is
18 constructed and arranged with at least one inwardly depending
19 lip, wherein said inwardly depending lip is constructed and
20 arranged for cooperation with at least one snap ring groove in
21 said outer gripping surface of said shank member;

22 wherein linear traversal of said compression ring member
23 with respect to said axially aligned collet member compresses
24 said collet member to engage said at least one snap ring
25 groove.

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Claim 10. The precise linear fastener system of claim 1 wherein said first end of said shank member includes a tensioning means, said tensioning means being constructed and arranged to allow said shank member to be tensilely loaded prior to linear traversal of said compression ring member into said engagement position with respect to said collet member.

Claim 11. The precise linear fastener system of claim 10 wherein said shank member tensioning means includes at least two generally flat surfaces, wherein said at least two generally flat surfaces are constructed and arranged for gripping and placing a tensile load on said shank member prior to linear traversal of said compression ring member into said engagement position with respect to said collet member.

Claim 12. The precise linear fastener system of claim 10 wherein said shank member tensioning means includes at least one groove extending around the circumference of said first end of said shank member, wherein said at least one groove is constructed and arranged for gripping and placing a tensile load on said shank member prior to linear traversal of said compression ring member into said engagement position with respect to said collet member.

1 Claim 13. The precise linear fastener system of claim 10
2 wherein said shank member tensioning means includes at least
3 one internal bore extending inwardly from said first end of
4 said shank member along the longitudinal centerline of said
5 shank member, wherein said at least one internal bore is
6 constructed and arranged for gripping and placing a tensile
7 load on said shank member prior to linear traversal of said
8 compression ring member into said engagement position with
9 respect to said collet member.

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11 Claim 14. The precise linear fastener system of claim 13
12 wherein said internal bore includes internal threads.

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14 Claim 15. The precise linear fastener system of claim 13
15 wherein said internal bore includes at least one axially
16 aligned groove extending around the circumference of said
17 internal bore.

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19 Claim 16. The precise linear fastener system of claim 10
20 wherein said shank member tensioning means includes a frangible
21 stem, whereby said frangible stem is severed from said first
22 end of said shank member when said first member reaches a
23 predetermined tension prior to linear traversal of said
24 compression ring member into said engagement position with
25 respect to said collet member.

1 Claim 17. The precise linear fastener system of claim 1
2 wherein said outer ribbed surface of said collet member and
3 said inner ribbed surface of said compression ring member are
4 constructed and arranged to maintain an axially aligned
5 interfitting relationship in said release position.

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7 Claim 18. The precise linear fastener system of claim 1
8 wherein said outer surface of said compression ring member
9 includes at least two wrench flats for increasing or decreasing
10 the said tension applied to said shank member subsequent to
11 linear traversal of said compression ring member into said
12 engagement position with respect to said collet member.

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14 Claim 19. The precise linear fastener system of claim 1
15 wherein said collet member is constructed of plastic.

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17 Claim 20. The precise linear fastener system of claim 1
18 wherein said collet member is constructed of copper.

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20 Claim 21. The precise linear fastener system of claim 1
21 wherein said collet member is constructed of brass.

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23 Claim 22. The precise linear fastener system of claim 1
24 wherein said collet member is constructed of bronze.

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1 Claim 23. The precise linear fastener system of claim 1
2 wherein said collet member is constructed of aluminum.

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4 Claim 24. The precise linear fastener system of claim 1
5 wherein said collet member is constructed of steel.

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7 Claim 25. The precise linear fastener system of claim 1
8 wherein said collet member is constructed of rubber.

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